BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 2002-01

BP WEST COAST PRODUCTS, LLC

BP CHERRY POINT COGENERATION PROJECT

EXHIBIT 31R.0 (AME-T)

APPLICANT'S PREFILED REBUTTAL TESTIMONY

ANN M. EISSINGER

INTRODUCTION

Q. Please introduce yourself to the Council

A. My name is Ann Eissinger. My business address is P.O. Box 176, Bow Washington, 98232.

Q. What testimony are you addressing?

A. My testimony addresses the concerns regarding impacts to the Birch Bay heron colony raised in the written prefiled testimony filed by Whatcom County witnesses Kate Stenberg and Paul Weizrba.

Q. What is your occupation and title?

A. I am the owner and principal Wildlife Biologist for Nahkeeta Northwest Wildlife Services. I work as an independent consulting biologist.

Q. Please describe your education and work history.

A. As a professional Wildlife Biologist I hold a Bachelor of Sciences in Biological Science from The Evergreen State College, Washington and have 12 years experience as a Consulting Biologist in western Washington. As a Consulting Biologist I conduct Biological Evaluation/Assessment for a variety of projects, completed small and large scale inventories of wildlife and habitat, provided guidance in crafting of critical areas guidelines, developed area specific wildlife conservation and management plans, as well as environmental site plans, conduct monitoring and field data collection, research and present public and professional education and training programs. My work with great blue herons began in 1988 with a request to review scientific information and assist in community based efforts to preserve the Point Roberts great blue heron colony, the largest heron colony on the west coast. Since that time I have been involved in field monitoring, scientific review, management, planning and conservation of great blue heron colonies throughout the Salish Sea (Puget Sound and Georgia Strait). My work with herons intensified in 1996 as the appointed consultant to HeronLink, a joint corporate heron conservation initiative sponsored by ARCO Products Company and Trillium Corporation in cooperation with Washington Department of Fish and Wildlife. At this time I prepared a detailed background document the Great Blue Heron of the

Salish Sea: a model plan for the conservation and stewardship of coastal heron colonies and prepared conservation and stewardship plans for both the Point Roberts and Birch Bay heron colonies, and commenced monitoring both colonies on an annual basis. In addition, between 1993 and 2002, I was the monitoring biologist for the Point Roberts heron colony during the planning and construction of the 198 acre Point Roberts Golf Course located adjacent to the heron colony. I am also a professional member of the trans-boundary Heron Working Group, a group of biologists from the U.S. and Canada working on heron related research topics, field methods and conservation. I have also developed and presented educational programs about heron life history and have provided programs to professionals, schools, environmental organizations and the general public for nearly a decade.

I have attached a current copy of my resume as Exhibit 31R.1.

Q. Can you describe your experience with the Birch Bay heron colony?

A. My experience with the heron colony near Cherry Point, identified in the WDFW database as the Birch Bay heron colony, started in 1991 with the WDFW biologist during a visit to the colony to estimate nest numbers and document the colony's location. Subsequent visits to the colony site were made for various reasons for Whatcom County Planning and ARCO. In 1996 I was contracted by ARCO Products Company to develop a Conservation and Stewardship Plan for the Birch Bay great blue heron colony, as well as start annual monitoring of the colony, conduct professional training for ARCO personnel and provide public education programs entitled the Secret Life of the Great Blue Heron. Seasonal monitoring of

the heron colony has been on going since 1997 and includes: weekly or biweekly site visits throughout the breeding season, productivity survey, nest counts, colony mapping and forage area observations. Since 1997 I have made over 120 monitoring site visits to the Birch Bay heron colony. Occasionally, special circumstances have required additional services including the rescue and rehabilitation or euthanasia of young herons, and the response and/or evaluation of disturbances including: logging adjacent to the heronry (1997), colony disturbance and premature fledging (1998), storm damage (1998-99) and abandonment (1999). An annual report has been submitted to ARCO/BP summarizing the monitoring results and status of the heronry for each year since 1997

Q. What is your role in connection with the BP Cherry Point Cogeneration project?

A. I was retained to evaluate the Cogeneration's potential impacts on the Birch Bay heron colony, particularly noise impacts.

Q. What information about the BP Cogeneration project have you reviewed?

A. I have reviewed portions of the BP Cherry Point Cogeneration Project Application for Site Certification pertaining to Existing Condition, Impacts and Mitigation Measures, including Sections 3.2 Air, 3.3 Water, 3.4 Wetlands, 3.6 Wildlife, 3.7 Fish, 3.9 Noise and Appendices D: Project Description and K: Noise Impact Analysis. I also reviewed the NEPA Summary, Draft Environmental Impact Statement and Revised Compensatory Wetland Mitigation Plan (April 2003) for the

project. In addition, I reviewed various prefiled testimony submitted by the applicant.

THE BIRCH BAY HERON COLONY

Q. Would you please describe the Birch Bay heron colony?

A. The Birch Bay great blue heron nesting colony is the third largest heronry in the Pacific Northwest and one of the largest on the west coast of North America. As a significant productivity center, averaging over 300 active nests per year over the past six years, the colony plays an important role in supporting the Northwest's population of coastal great blue herons. This population is a unique heron subspecies, *Ardea herodias fannini*, and resides in the area year-round. By comparison to other colonies of similar size in the region, the Birch Bay colony is very sensitive to nearby human activity or intrusion into the colony. As a result, the colony is off limits to unauthorized entry and biological monitoring methods are designed to minimize potential disturbance.

Q. Where is the colony located?

A. The Birch Bay heron colony is located north of Terrell Creek and west of Jackson Road (T39N, R1W S1NW) in Blaine, Washington. This colony has been situated in the area since 1983 (first record) and likely prior to that year. The colony was displaced from its earlier location, south of Terrell Creek sometime in the 1980's and reestablished at its current location. In addition to the heron nesting area, are the associated heron habitats. I have attached three maps to my testimony (Maps A, B and C Exhibits 31R.2, 31R.3 and 31R.4) that identify the location of the colony and

the habitat areas of use by the Birch Bay herons. Map A (Exhibit 31R.2) Close View, illustrates the heron colony and associated use areas near the BP Cherry Point Refinery and proposed cogeneration site. Use areas include: primary foraging areas where herons concentrate during the nesting season to feed; secondary foraging areas where individual or small groups of herons are known to feed year round; primary staging areas where herons gather in large concentrations early in the breeding season, prior to nesting; secondary staging where individuals or loose aggregations occur; roosting sites of documented use during or following the breeding season; and areas of questionable use, where potential habitat exists, but few observations of heron use have been documented; areas of no known use are areas where the habitat is marginal and no observations of heron use are documented. Map B (Exhibit 31R.3) Expanded Overview, illustrates the whole known use area of the Birch Bay herons and includes their general flyways to and from foraging areas. Map C (Exhibit 31R.4) View of Foraging and Staging Area provides a detailed view of the habitat directly associated with the refinery and proposed cogeneration site, it also overlays the wetland mitigation areas to illustrate their relationship to the heron use areas.

The Birch Bay heron colony is situated within a 150 acre contiguous forest block, and occupies approximately 2 acres within the stand. The associated forest is part of a large natural area along Terrell Creek extending from Birch Bay State Park east to BP owned lands, which are retained as a buffer to their Cherry Point Refinery. The surrounding area is a mix of fallow fields, agriculturally managed fields, open stream corridor and forest patches. The

nesting area and associated lands (with the exception of the land directly south of the colony) are owned by BP and protected as a preserve under the terms of a conservation easement held by the Whatcom Land Trust.

Herons require relatively mature trees in which to build their nests. The nests are situated in 50-70 year old forest composed of mixed conifer and deciduous species. The colony site may be further described as a forested wetland due to standing water on the forest floor nine months of the year. The tree species utilized by the Birch Bay herons are primarily western paper birch (*Betula papyrifera*) 77% and red alder (*Alnus rubra*) 18%, with conifer species present, but few are used for nesting.

Q. Do the heron remain in the colony year round?

A. No. The Birch Bay herons have established a relatively predicable annual nesting chronology that can be described in five phases: 1) staging, 2) mate selection/courtship/nest building, 3) egg laying/incubation, 4) hatching/rearing and, 5) fledging/dispersal. The entire cycle spans approximately six months, beginning in March with the return of the herons to nearby fields for staging, followed by reentry to the colony and commencement of nesting by the first of April, hatching of first young in early May and fledging of young beginning in July and continuing through August. Although all the nesting activities occur in the nest stand, staging and foraging occur outside the forest. Adults and young from the Birch Bay heron colony disperse to nearby congregation areas including: Terrell Creek

corridor roost southwest of the colony, Birch Bay tidelands, Drayton Harbor and Semiahmoo Bay tidelands and two associated roosts one on the southwest corner of Drayton Harbor in a near-shore tree-lined wetland pond and on Semiahmoo spit in the central meadow. Ultimately, adults and young disperse independently and may be found in any suitable habitat.

Q. What is "staging," and where does it occur for the Birch Bay heron?

A. Staging is the gathering of adult herons in nearby fields prior to nesting. It is thought to be a vital part of the social structure of the colony and some gatherings are concentrated within certain areas. Most of the staging is done in the fallow fields directly east of the colony (east of Jackson Road) with some scattered groups further east and to the south. The staging areas used by the heron are identified on Map A and C, Exhibits 31R.2 and 31R.3, by the yellow crosses depicting the common area of concentration and by a broken green line illustrating the areas of use by individuals and smaller or loose aggregations.

Q. Can you describe the foraging habits of heron from the Birch Bay colony?

A. Heron foraging takes place in a combination of habitats including marine shoreline, intertidal, wetland, stream, riparian and upland fallow field. Prey sought by herons include fish (fresh water and marine), crustaceans (freshwater and marine), amphibians (fresh water/upland) and small mammals (upland). The primary prey species of great blue heron identified by regional researchers (list attached) and my own observations include: upland Townsend's Vole (*Microtus townsendii);* freshwater sculpins, frogs *(Hyla sp., Rana sp.),* crayfish; marine, crescent gunnel

(*Pholis* laeta), saddleback gunnel (*Pholis oranta),* marine sculpins (various species), shiner perch (*Cymatogaster aggregate)* and smelt *(Hypomesus or Thaleichthys sp.).* The most concentrated foraging during the nesting season occurs in the intertidal areas near the colony.

Based on observations, the areas utilized most frequently by the herons of the Birch Bay colony are Birch Bay, Drayton Harbor, Semiahmoo Bay, Lummi Bay, and Lake Terrell, although with less concentration. I have identified these areas on Map B, Exhibit 31R.3, by name with the foraging areas outlined, plus flyways are also illustrated. The distance to foraging areas ranges from 1.88 miles to Birch Bay to 8.13 miles to Lummi Bay, with the largest concentrations of herons frequenting Drayton Harbor and Semiahmoo Bay 5.5 miles. The Terrell Creek corridor from the vicinity of Jackson Road west and east as well as the fallow fields adjacent to the heronry area (to the east and south of the colony) are also important foraging areas, and frequented by herons, particularly at high tide. All of these areas continue to be utilized outside of the nesting season but in lower densities. Disturbance during hunting season cause herons to avoid Lake Terrell and the fallow fields around the refinery each autumn.

Q. Has the Birch Bay heron colony ever experienced significant disturbances or abandonment?

A. The Birch Bay heron colony has experienced disturbance and abandonment, but has remained active. The first major disturbance was displacement of the colony by logging in the mid-eighties. Logging adjacent to the colony in 1997 removed the

protective buffer to the south and resulted in significant blow-down of nest trees in the winter storms. In 1998, the heronry experienced an unexplained disturbance that resulted in the premature fledging of young and loss of nests. The winter of 1998-99 caused additional storm damage. The last major disturbance took place in 1999 when the heronry, at its peak in nesting season, abandoned without a known cause. An investigation was launched to determine the cause or factors' contributing to the abandonment, but no definitive conclusion was made. Following the abandonment, the colony recolonized, and to date has reached approximately 60% of the 1998 nesting numbers. Since 2000, the colony has remained stable, supporting nearly 260 nesting pairs per year.

IMPACTS ON THE HERON COLONY

Q. In her testimony, Dr. Stenberg asserts that there are three critical heron habitats within the project area and vicinity: the heron nesting colony and buffer; the "staging" area; and foraging areas. Do you agree?

A. Dr. Stenberg is correct in her general identification of primary habitats of concern. However, I believe she overstates the importance of areas near the Cogeneration Project site and wetland mitigation areas. I must point out that "critical habitat" is a professional term applied in reference to ESA (Endangered Species Act) related species and that "critical habitat" has not been scientifically defined for great blue herons, because great blue herons are not a "listed" species under ESA. The areas that I would consider to be primary habitat, essential for the success and perpetuation of the Birch Bay heron colony include: the nest stand and associated forest, the staging area and foraging areas, including fallow fields (fields contiguous with the

staging areas east and to the south of the colony) (Map A), fresh water systems (Terrell Creek and Lake Terrell)(Map A) and marine shoreline and intertidal areas including Birch Bay, Drayton Harbor/Semiahmoo Bay and Lummi Bay (Map B). The areas identified as primary foraging are linked by flyways that are frequently used by the herons flying to and from the colony (Map B). There are also three roost sites, Terrell Creek, Drayton Harbor and Semiahmoo Spit, that have been identified with concentrated use and likely serve an important function during the breeding season both for adults and also fledging juveniles (Map B). These habitat areas are essential for the Birch Bay colony due to the habitat and prey that is available and their concentrated use during the breeding season (March-August). These areas are also utilized outside of the breeding season by individuals or smaller aggregations. The secondary foraging (Map A) represent those areas in the vicinity of the colony that are known to be utilized year-round by individual herons, and with the exception of seasonal fallow field use, these are not areas that are of critical importance to the colony as a whole.

Q. Dr. Stenberg's testimony suggests that impacts to these habitats may result in abandonment of the colony or reduction in the colony's productivity. Do you agree?

A. I agree that significant adverse impacts to the primary areas used for heron nesting, staging and foraging habitat may result in the abandonment of a colony or decreased productivity of a colony. However, while many of Dr. Stenberg's concerns are appropriate considerations, they are speculative and need to be evaluated in context

of habitat needs, spatial and temporal effect and measured against known or likely responses by herons.

In fact, few colony abandonments have been linked to a single specific cause. With the exception of catastrophic events such as, nest stand removal (natural or unnatural), logging adjacent to a heron colony (loss of buffer) or shooting of herons in the colony, which resulted in abandonment, a single direct cause(s) of abandonment is rarely identified. As a result, Dr. Stenberg's assertions, that link the cogeneration plant singularly to direct impacts that would cause abandonment of the Birch Bay heron colony, are appreciated, but unlikely in the case of this proposed project.

Furthermore, although Dr. Stenberg's theoretical concerns and questions are reasonable, it appears that she has little experience with this particular colony. Given the known habits, pattern of movements and habitat utilization by the herons from the Birch Bay colony, it is unlikely that the cogeneration plant placement, construction, plant operation noise output or water discharge will have a direct impact on the heron colony.

Q. Dr. Stenberg specifically suggests that the Cogeneration project may impact critical Cherry Point heron habitat in four ways: (1) elimination of 33 acres of wetland and wetland buffer for the project site; (2) short-term adverse impacts on 110 acres of the wetland mitigation area; (3) noise impacts on the herons' nesting, staging and foraging; and

(4) wastewater changes affecting populations of forage fish for the heron.

Let's discuss each in turn.

Do you agree that the project will eliminate 33 acres of wetland and wetland buffer in a "critical foraging area" for the heron?

A. No, there is no question that the 33 acres of wetland and wetland buffer area that forms the footprint of the site will be permanently impacted, but this is marginal habitat and use of the area by herons has not been documented. During the seven years I have spent systematically monitoring the Birch Bay heronry and surveying the area for heron foraging and other activity, I have not observed herons foraging within the cogeneration plant site. The site represents marginal habitat that is disconnected from the contiguous heron habitat area north of Grandview and west of Blaine Roads. The attached Map A (Exhibit 31R.2) illustrates the known heron foraging areas. The loss of 33 acres of fallow field (wet meadow) to the east of the BP Cherry Point Refinery is therefore very unlikely to have a direct adverse effect on the Birch Bay heron colony.

Q. Do you share Dr. Stenberg's concern that the project's wetland mitigation plan may have short-term adverse impacts on 110 acres of the herons' "critical habitat"?

A. Again, Dr. Stenberg's concerns about habitat disturbance in the wetland mitigation area are generally valid, but they are based on assumptions and generalized information for the area. Following a review of the URS Wetland Mitigation Plan, the areas in question have varied use patterns and for at least half of the area no known use by herons. In viewing the heron foraging and staging areas of use with

the wetland mitigation overlay (Map C), it appears that most of the mitigation area will encompass heron habitat areas of secondary use or no known use.

The mitigation sites contain areas of both degraded and suitable fallow field habitat. Functional upland fallow field habitat is important to herons for a number of reasons. Herons depend on upland fallow field for pre-breeding staging activities in the early spring (March) and for foraging on small mammals, primarily the Townsend's vole *(Microtus townsendii)*. Foraging in fallow fields occurs year round and is important for young survival through the winter and during the nesting season as a supplementary food source for the breeding adults and young.

Dr. Stenberg's concerns regarding impacts to "critical habitat" associated with the mitigation areas are therefore well intentioned, however, not founded on current empirical data, specifically habitat conditions or use by the herons. Given the marginal habitat and lack of use in the area east of Blaine Road (CMA1), changes in this area, be it short or long term, will not likely affect the heron colony or individual herons. Most of the area west of Blaine Road (CMA2) is also marginal habitat and has little known use by herons with the exception of the northwest portion which is contiguous with the staging and foraging areas near the colony. This area could be maintained, in part, as fallow field within the parameters of the wetland mitigation plan, thus avoiding potential impact or disturbance to herons. Given the lack of use and marginal condition of most of the habitats within the wetland mitigation area, it is unlikely that mitigation activities will adversely affect the Birch Bay heron colony.

Q. Dr. Stenberg also states that noise from the facility may adversely impact heron nesting in the colony. Do you share this concern?

A. No, I do not share Dr. Stenberg's concern regarding noise from the cogeneration facility adversely impacting the heron colony given the distance of the colony from the cogeneration facility and results of noise studies by three different parties. I agree that noise from any new facility should be examined for potential disturbance and/or adverse affects to both human and wildlife present in the vicinity. However, here again, Dr. Stenberg apparently extrapolates from the hypothetical possibility of noise disturbances to presumed actual impacts without a thorough knowledge of the site and its conditions. In this case, the levels of noise reaching the heron colony and the areas of primary use are so low that impact to the herons is very unlikely. Furthermore, based on an examination of the noise analysis for this project combined with my experience with this colony, and other heron colonies, indicates that the Birch Bay herons are unlikely to be disturbed by the level of noise generated by the Cogeneration facility.

First, unfortunately, for many species of wildlife, including great blue herons, the scientific literature lacks sound tolerance levels or guidelines, which limits our ability to accurately assess impacts on these species resulting from noise. In that absence, reliance on human levels of tolerance and perceptibility is generally accepted as the best available measure. Here, the sound measurements and modeling for the facility indicate that the increased level of sound (dBA) emitted from the cogeneration facility reaching the heron colony is expected to be imperceptible by human hearing. The distance of the heron colony from the

proposed cogeneration facility is approximately 1.65 miles. Although most of the area between the colony and the project site is open field, the colony is buffered by forest immediately around the nesting area and buildings associated with the Birch Bay Community Church. This distance, combined with the buffer of forest and buildings, provide a sound attenuating affect that reduces noise reaching the colony. In addition, the ambient noise from the refinery, the nearby Point Whitehorn generating facility, traffic on Jackson Road and even noise generated by the heronry itself, which varies depending on the level of activity with in the colony, are factors that will further diminish the perceptible noise from the cogeneration project and thus minimize potential impact on the heron colony.

Second, other heron colonies are known to thrive in areas where the ambient noise levels are higher. At the March Point heron colony, noise in the colony from a local saw mill averages 56 dBA and the herons tolerate temporary high levels of noise reaching 84 dBA (Prezant Associates, 2002). In fact, as described further below, my own experience with this colony indicates that, while sensitive to human intrusion, they are not particularly sensitive to noise, especially constant noise. Given that the sound increase at the point nearest to the heron colony is expected to be imperceptible to human hearing, it is unlikely to disturb the Birch Bay herons. As stated in Dr. Wierzba's testimony, the sound impact near the heron colony nesting area will be insignificant.

Q. Noise during construction of the Cogeneration facility will not be constant. In your opinion, is the construction noise likely to cause abandonment or a reduction in productivity of the colony?

A No, noise from the construction of the cogeneration facility is not likely to cause abandonment or reduced productivity of the Birch Bay heron colony. Given that the construction phase of the project is temporary and the laydown area is located approximately 1.5 miles from the colony, effects will likely be limited to disturbance of herons attempting to forage in the immediate area of construction and possibly diversion of heron fly-overs of that area. These diversions are commonly observed, including diversion around humans walking in a field or open space. I am basing my opinion on experience with heron colonies during project construction and other noise and disturbance related observations.

The Birch Bay heron colony has recently experienced direct noise disturbance during construction of a new bridge over Terrell Creek at Jackson Road in June and July 2003. The project was located approximately 1,100 feet from the colony. During construction, heavy equipment was used including: dump trucks, back hoe, excavator, paver, roller and a crane. In addition, for a short period of time, a chainsaw and jack hammer were used on the bridge deck and a hammer type pile-driver was also used. No response to the construction equipment related noise was observed during monitoring. At the same time of the bridge construction, BP was also constructing and new facility and pile driving from the refinery was also audible, but the herons exhibited no observable response. Therefore construction

during the nesting and rearing period, is unlikely to disturb the herons within the colony.

Q. She also suggests that noise from the facility may impact heron during "staging." Do you agree?

A. Impacts to herons during staging due to noise increases from the cogeneration facility are unlikely. Individual adults, from Birch Bay heron colony gather in fields near the nest site prior to mate selection and nesting. The staging activity usually occurs in March and is a vital part of the breeding cycle. The staging area can vary from year to year and will typically have concentrated groups of herons and scattered individuals over a broad area. The area of greatest concentration and consistent use is east of Jackson Road on the east side of Terrell Creek, while a small aggregation of herons have been observed at the northwest corner of Jackson and Grandview (Map A). Herons have also used the field just north of the main entrance to the refinery and individuals scatter throughout the fields associated with these staging locations.

For the most part, the heron staging concentrations are at least one mile from the proposed cogeneration site. Although, the staging areas are in the open fields with no forest or other buffer, the sound levels are likely to be equivalent to or slightly louder than the sound levels at data collection Point # 7 at Jackson Road and Terrell Creek. As a result, the noise increase from the cogeneration facility in the primary heron staging area will be negligible and no impacts or disturbance to the herons are identified.

Detailed heron habitat information is not available to the general public due to species sensitivity. The staging location information Dr. Stenberg likely accessed was from the Terrell Creek Wildlife and Habitat Baseline Report (Eissinger 2002) which she cites in her testimony. The Terrell Creek report illustrates a general use area for heron staging ranging from Jackson Road east to Blaine Road. However, the more detailed heron staging location information presented in this testimony, more accurately indicates the areas of use.

In the event that construction is occurring between March 1 and April 1, staging herons in the fields northwest of the construction area could be temporarily disturbed, depending on the activity of the construction site and the proximity of the staging herons. Because the herons generally stage just east of Jackson Road approximately 1.3 miles northwest of the proposed construction site, herons using this area are less likely to be disturbed, given the distance from the construction site. Only once have herons been reported staging just north of the refinery entrance. At that location, there is potential for disturbance. Again, however, disturbance to an area used on such a limited basis, is unlikely to cause disruption or abandonment of the colony.

Q. Dr. Stenberg also states that noise from the facility may affect herons' ability to utilize "critical foraging habitats." Is this concern substantiated?

A. The primary foraging areas for great blue heron associated with the Birch Bay heron colony include the intertidal areas of Birch Bay, Drayton Harbor/ Semiahmoo

Bay and Lummi Bay (Map B). These foraging areas constitute the highest concentrations of herons during the nesting period. Lake Terrell and Terrell Creek are also used with regularity. The fields in the vicinity of the colony and north of the refinery are important during the early breeding season and are used by individuals throughout the year, but are considered secondary foraging habitat.

Noise from the cogeneration facility will likely have a negligible effect on heron foraging given that most their activity is concentrated along marine shorelines located from 3 to 8 miles from the project site. The area where the noise from the cogeneration facility could be heard would be in the fields between Terrell Creek and the project site. Given that the heron's use of this immediate area is minimal, and most of the foraging activity is further west and along Terrell Creek within the corridor, the herons are unlikely to be directly effected by the noise increase.

Q. Is there any scientific authority establishing certain sound levels above which heron are adversely impacted?

A. No, there is currently no known scientifically based sound tolerance levels or guidelines for great blue herons. As discussed earlier in this testimony, due to this lack of measurable level, it is necessary to compare colonies and different tolerance levels, with the knowledge that each colony has an individual tolerance to noise and other disturbances. The general guideline applied in most cases is that which is acceptable for humans. It is also generally accepted that urban colonies, such as the Kiwanis Ravine in Seattle near the Ballard Locks and an active railroad line, have adapted to higher ambient noise levels. There are also colonies outside of cities that

tolerate higher noise levels, such as the earlier mentioned March Point colony located next to a lumber mill and log storage yard, and a colony on Whidbey Island near Ault Field where Navy jets land within 4,000 feet of the nesting area. Although these sites are subject to periodic high noise levels, these levels are not sustained over a 24 hour period, there are also periods of relatively low ambient noise. These heron colony sites simply exemplify the tolerance of certain herons to reproduce in noisy environments. Given the differences among heron colonies, impacts to each colony need to be evaluated independently.

Q. Finally, Dr. Stenberg asserts that changes to wastewater parameters to accommodate the facility may adversely affecting populations of forage fish for the heron. Do you agree with her conclusion?

A. No, given that the Birch Bay herons do not concentrate feeding activities at Cherry Point and the fact that Pacific herring are not a primary prey species alleviates concerns that changes in regulated wastewater discharge from BP into Georgia Strait would in anyway directly affect the heron colony. Based on the observations I have made and records from others, the foraging locations utilized by herons from the Birch Bay colony during the nesting season include: Birch Bay, Drayton Harbor, Semiahmoo Bay and Lummi Bay. These areas are directly associated with shallow intertidal shelves or embayments with extensive eelgrass meadows, tide pools and/or shallow channels where prey concentrate and herons have the ability to hunt efficiently within the tidal cycle. Prey found in these primary areas include those marine species listed below. Although herring is listed, it is not a primary prey species.

Great Blue Heron Prey Species
(From Butler 1995, 1997; Forbes et al. 1985)

Terrestrial

Pacific Treefrog	*Hyla regilla*
*Townsend's Vole	*Microtus townsendii*
Vagrant Shrew	*Sorex vagrans*
Snakes	Various species

Freshwater

Bullfrogs	*Rana catesbeiana*
Crayfish	*Pacifasticus leniusculus*
Peamouth Chub	*Mylocheilus caurinus*
Redside Shiner	*Richardsonius balteatus*
Three-spined Stickleback	*Gasterosteus aculeatus*
Cutthroat Trout	*Oncorhynchus clarki*
Rainbow Trout	*Oncorhynchus mykiss*
Sculpin	*Cottus sp.*

Marine

Bay Pipefish	*Syngnathus leptorhynchus*
Crabs	Various species
Eulachon	*Thaleichthys pacificus*
*Crescent Gunnel	*Pholis laeta*
*Saddleback Gunnel	*Pholis oranta*
Isopods	*Idotea* sp.
Mud Shrimp	*Upogebia pugettensis*
Pacific Herring	*Clupea harengus pallasi*
Plainfin Midshipman	*Porichthys notatus*
*Sculpins	Various species
*Shiner Perch	*Cymatogaster aggregata*
*Staghorn Sculpin	*Leptocottus armatus*
Starry Flounder	*Platichthys stellatus*
Surf Smelt	*Hypomesus pretiosus*
Three-spined Stickleback	*Gasterosteus aculeatus*
Tube-snout	*Aulorhynchus flavid*
Walleye Pollack	*Theragra chalcogramma*

*Primary Prey Species

Q. Do you have concerns regarding the Birch Bay heron colony apart from the Cogeneration project?

A. Apart from the cogeneration plant, I am concerned about long-term cumulative impacts from landscape changes, particularly the conversion of fallow field habitat, resulting from development and conversion of available habitat to unsuitable areas for herons. To ensure that future development or landscape changes do not have an adverse impact on the Birch Bay heron colony, active monitoring, management and conservation will be important. Prior to future projects, development or habitat changes, a formal long term management and conservation plan can be developed and implemented in order to ensure the future of the Birch Bay heron colony. Such a plan would provide critical guidance for future projects, set clear guidelines for habitat and species protection, and provide ongoing data collection to assist in a greater understanding of the great blue heron and its ecological community.

CONCLUSION

Q. In sum, based on your experience with the Cherry Point heron colony, are you concerned that the Cogeneration facility will adversely impact the heron?

A. In summary, following the review of information filed in the EFSEC process for the proposed BP Cogeneration Facility at Cherry Point and subsequent testimony and given my seven years experience monitoring the Birch Bay heron colony, other heron colony sites and familiarity with the current scientific literature and management guidelines, it is my opinion that the proposed cogeneration facility site placement, construction or operation will not adversely impact the Birch Bay great blue heron colony.

END OF TESTIMONY